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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/180,601	11/10/1998	TAKAHIRO OSHITA	1213/GEB667	6970

7590 11/19/2001

WENDEROTH LIND & PONACK
2033 K STREET NW SUITE 800
WASHINGTON, DC 20006

EXAMINER
DOROSHENK, ALEXA A

ART UNIT	PAPER NUMBER
1764	

DATE MAILED: 11/19/2001

Please find below and/or attached an Office communication concerning this application or proceeding.

A->

Office Action Summary	Application No.	Applicant(s)	
	09/180,601	OSHITA ET AL.	
	Examiner	Art Unit	
	Alexa A. Doroshenk	1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 August 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *12-20 and 22-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *12-20 and 22-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 12-20 and 22-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohshita et al (5,156,099) in view of Hirayama et al (5,620,488).

With respect to claims 24 and 27, Ohshita et al disclose a fluidized-bed furnace apparatus comprising:

a combustion region (3) generating combustible gas and particles (col. 7, lines 58-67);

a heat recovery region (4);

a fluidized medium (15) operable to circulate between the combustion and heat recovery regions (col. 6, lines 41-49); and

a heat recovery surface (5) in the heat recovery region to control the temperature of the bed (an inherent result of operation of the device).

Though Ohshita et al recognize that gases and particles are generated by the operation of the apparatus, Ohshita et al used a cyclone to separate the gases and solids and recycles the solids into the combustion region. Ohshita et al do not disclose wherein a melt combustion furnace receives the gases and particles generated by the apparatus.

Hirayama et al disclose a similar fluidized bed combustion apparatus with a heat recovery region that generates gases and fine particles. Hirayama et al teach wherein the gas and particles produced can be sent to a melt combustion furnace and thereby drive a gas turbine (col. 5, lines 53-55). It would have been obvious to one of ordinary skill in the art at the time the invention was made to send the gas and particles generated by the apparatus of Ohshita et al into a melt combustion furnace, as taught by Hirayama et al, since it is a means by which the same products (gas and particles) can be used in an economic fashion, to drive a gas turbine.

With respect to claim 22, Ohshita et al further disclose wherein:

the heat recovery and combustion regions are separated by a partition wall (18);

said combustion region (3) includes first (area with downward arrow) and second (area with upward arrow) areas adjacent to each other comprising:

an air diffusion device (2) to supply a first fluidizing gas (14) to the first area so that the medium descends (see arrow), to supply a second fluidizing gas (13) to the second area so that the medium is fluidized, and to supply the heat recovery with a fluidizing gas (12) so that there is circulation through the areas and regions of fluidized medium;

said combustion (3) and recovery (4) regions are connected above and below the partition wall (18) (col. 6, lines 41-49);

said heat recovery surface (5) is a tube and therefore medium can pass there through (col. 6, line 1); and

said air diffusion device (2) is also at the bottom of the heat recovery region (4) and operates so that the fluidized medium descends in the heat recovery region (4), circulate there from below the partition wall (18) back to said combustion region (3) (col. 6, lines 41-49).

With respect to claim 23, Ohshita et al are silent at to the particular cross-sectional shape of the apparatus. Hirayama et al disclose wherein a circular cross-sectional shape for such an apparatus (see fig. 2 and 4) and wherein the heat recovery region is on the periphery and the combustion region is in the center (col. 5, line 62- col. 6, line 18). It would have been obvious to one of ordinary skill in the art at the time the invention was made to select a circular cross-sectional shape for the furnace and annular positions of the regions as it is merely the selection of one of numerous configurations known to be effective in the art.

Ohshita et al also discloses wherein the air diffusion device is positioned such that an upward flow goes into the central area, peripheral area, and heat recovery region with the mass flow such that moving bed is moving upwards in the center and descending in the periphery (col. 6, lines 18-23).

Ohshita et al also disclose:

said heat recovery surface (5) is a tube and therefore medium can pass there through (col. 6, line 1); and

said air diffusion device (2) is also at the bottom of the heat recovery region (4) and operates so that the fluidized medium descends in the heat recovery region (4),

circulate there from below the partition wall (18) back to said combustion region (3) (col. 6, lines 41-49).

With respect to claims 20 and 25, Ohshita et al disclose a method of treating combustibles comprising:

circulating a fluidized medium between a heat recovery region (4) and heat recovery region (col. 6, lines 41-49);

gasifying the combustibles in the combustion region (3) generating combustible gas and non-combusted particles (col. 7, lines 58-67);

recovering heat in the heat recovery region (col. 6, lines 34-58).

Though Ohshita et al recognize that gases and particles are generated by the operation of the apparatus, Ohshita et al used a cyclone to separate the gases and solids and recycles the solids into the combustion region. Ohshita et al do not disclose wherein a melt combustion furnace receives the gases and particles generated by the apparatus.

Hirayama et al disclose a similar combustible treating process with a heat recovery region that generates gases and fine particles. Hirayama et al teach wherein the gas and particles produced can be sent to a melt combustion furnace and thereby drive a gas turbine (col. 5, lines 53-55). It would have been obvious to one of ordinary skill in the art at the time the invention was made to send the gas and particles generated by the apparatus of Ohshita et al into a melt combustion furnace, as taught by Hirayama et al, since it is a means by which the same products (gas and particles) can be used in an economic fashion, to drive a gas turbine.

With respect to claims 26 and 28, Hirayama et al disclose wherein the melt combustion furnace is operable at 1300°C (col. 5, lines 53-55).

Ohshita et al are silent as to the operating temperature of the fluidized bed furnace, but the very similar fluidized bed furnace of Hirayama et al is disclosed as operating from 450°C to 650°C (col. 4, lines 2-6). It is held by the examiner that the apparatus of Ohshita et al is capable of operating at the same temperatures as those of Hirayama et al since both devices comprised a fluidized bed with similar combustion and heat recovery regions and structural elements.

With respect to claim 12, Ohshita et al further disclose wherein:

the heat recovery and combustion regions are separated by a partition wall (18);

said combustion (3) and recovery (4) regions are connected above and below the partition wall (18) (col. 6, lines 41-49);

said combustion region (3) includes first (area with downward arrow) and second (area with upward arrow) areas adjacent to each other;

supplying a first fluidizing gas (14) to the first area so that the medium descends (see arrow), supplying a second fluidizing gas (13) to the second area so that the medium is fluidized, and supplying the heat recovery with a fluidizing gas (12) so that there is circulation through the areas and regions of fluidized medium;

controlling the mass flow and adjusting the supply of the fluidizing gases so that the fluidizing medium flows as described above (col. 5, line 56- col. 6, line 3); and

flowing medium from the combustion region over the partition wall into the heat recovery region and returning the medium to the combustion region (col. 6,lines 41-49).

With respect to claim 16, Ohshita et al are silent at to the particular cross-sectional shape of the apparatus. Hirayama et al disclose wherein a circular cross-sectional shape for such an apparatus (see fig. 2 and 4) and wherein the heat recovery region is on the periphery and the combustion region is in the center (col. 5, line 62- col. 6, line 18). It would have been obvious to one of ordinary skill in the art at the time the invention was made to select a circular cross-sectional shape for the furnace and annular positions of the regions as it is merely the selection of one of numerous configurations known to be effective in the art.

Ohshita et al also discloses wherein:

the air diffusion device is positioned such that an upward flow goes into the central area, peripheral area, and heat recovery region with the mass flow such that moving bed is moving upwards in the center and descending in the periphery (col. 6, lines 18-23);

controlling the mass flow and adjusting the supply of the fluidizing gases so that the fluidizing medium flows as described above (col. 5, line 56- col. 6, line 3); and

flowing medium from the combustion region over the partition wall into the heat recovery region and returning the medium to the combustion region (col. 6,lines 41-49).

With respect to claims 13-15 and 17-19, Ohshita et al disclose wherein the thermal energy (temperature) in the furnace is regulated by controlling the supply of the fluidizing gas (air) (col. 7, lines 8-38). Therefore, the supply of air to the fluidized bed is recognized by Ohshita et al as a result effective variable which relates to the temperature of the bed. It has been held that the discovery of on optimum value of a

result effective variable in a known process is within the skill level of the art. In re Boesch and Slaney, 617 F2d. 272, 276 [205 USPQ 215, 219] (CCPA 1980).

Response to Arguments

3. Applicant's arguments filed Aug. 31, 2001 have been fully considered but they are not persuasive.

35 USC 112, Second Paragraph

The rejection of claims 11-24 under 35 USC 112, second paragraph are withdrawn due to applicant's cancellations of claims 11 and 21 as well as applicant's amendments to the remaining claims.

35 USC 103

Applicant's arguments with regard to the pending claims over the art rejections have been persuasive. The 35 USC 103 rejections presented in the final rejection dated November 29, 2000 (paper no. 7) are withdrawn and a new grounds of rejection has been set forth above.

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexa A. Doroshenk whose telephone number is 703-305-0074. The examiner can normally be reached on Monday - Thursday from 8:00 AM - 6:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marian Knode can be reached on 703-308-4311. The fax phone numbers

for the organization where this application or proceeding is assigned are 703-305-5408 for regular communications and 703-305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

JERRY D. JOHNSON
PRIMARY EXAMINER
GROUP 1100

AAD
November 14, 2001